Nova et Vetera.

MODERN FAITH HEALING.

F. ANTON MESMER.

(Concluded from page 201.)

THE Royal Society of Medicine presented a report to the same effect as that of the Commissioners.* The Government was so impressed by the dangers of animal magnetism that it took steps to make the reports as widely public as possible. More than 20,000 copies were printed by its orders, and distributed in France as well as in foreign countries.†

OBJECTIONS TO THE REPORT.

Objections were made by some to the report on various grounds. For one thing it was said that Franklin, being then unwell, had not been able to be present at the experiments. It is proved, however, by the report itself that he was only confined to the house by attacks of gout, and that the Commissioners had often carried on their inquiries there in his presence. It was also proved that he submitted to attempts to magnetize him, but, as might be expected, to no purpose. Another objection was that the Commissioners did not inquire into the method of Mesmer, but into that of d'Eslon, who did not know his procedures. This objection was anticipated by the Commissioners, and, as has been seen, was replied to in the Secret Report. D'Eslon was a Doctor-Regent of the Paris Faculty, and was initiated into the inner mysteries of the "discovery" by Mesmer, who at first often spoke of his honesty and candour, though after they quarrelled he denounced his favourite pupil as an impostor. Moreover, Berthollet, the famous chemist, was asked by the Duke of Chartres to attend Mesmer's performances in order that he might give an account of the procedure. He received detailed instructions from Mesmer himself, and operated according to his principles on a great number of persons, particularly the poor people who followed the treatment. He published a declaration in which he expressed the opinion that the whole thing was quackery.

The Commissioners have been criticized for not taking into consideration the alleged therapeutic effects of animal magnetism. That this objection is unfounded is shown by their report, in which they say that while it is always difficult to form a judgement as to the value of a particular remedy the reality of which there is no doubt, it is obviously impossible to estimate the effect of an agent which does not exist. Besides, Mesmer himself had put himself out of court, as we have seen, by refusing to submit anything but testimonials. Again, he had himself admitted that cures prove nothing.

It has already been stated that Mesmer was induced to promise to reveal the whole secret of his method to inquirers who would subscribe 100 louis each. He deputed the task to adepts who were supposed to have been initiated by the master. Chief among them were Eprémeuil and Bergasse. They gave theoretical courses of lectures to the subscribers, which served as an accompaniment and explanation of the medical treatment to which it may be said not only sufferers but the public were admitted. But the adepts had to confess that the inner mysteries had not been revealed to them. It should be stated that no sufferers from diseases repulsive in themselves or disagreeable to the spectators were admitted to the privileged circle round the tub. Mesmer would not allow an unhandsome disease to come between the wind and the nobility of his fashionable *clientèle*.

TESTIMONIES.

Is there any evidence that Mesmer ever cured organic disease? That he produced nervous "crises" is unquestionable, but these were only manifestations of hysteria similar to those seen in the *convulsionaires* round the tomb of the Deacon Pâris.‡

There were not a few, however, who believed that real cures were wrought by means of magnetism. Among these were members of the medical profession. It is impossible at this time of day to examine all the testimonies critically, but a glance at some of them will be sufficient to show what value is to be attached to this evidence. It is fitting that the first witness called should be d'Eslon,§ to whose testimonies special interest is attached, as he was for a time closely associated with Mesmer.‖

The beginning of his acquaintance with the Master was accidental. Chance made him acquainted with some among Mesmer's patients whose integrity could not be suspected. While he was visiting a sick person one day Mesmer came in. After the ordinary exchange of civilities Mesmer spoke to the patient, and, to d'Eslon's great surprise, the latter had a violent crisis. His eyes wandered, his chest heaved, his voice and respiration failed, the attack ending in profuse perspiration. D'Eslon, after keeping silence for some time, told Mesmer that he was a physician. He showed no sign of embarrassment, though he received the intimation rather coldly. In the course of conversation, however, Mesmer showed a knowledge of medicine which d'Eslon would have liked to possess. From that time he frequently saw Mesmer, who taught him that as there is one nature, one life, one health, there is only one disease, one remedy, one cure. It is as simple as the system by which Sangrado taught Gil Blas the whole art of healing at once. Mesmer cured only by the aid of crises, that is to say, by seconding or provoking the efforts of Nature. Hence, says d'Eslon, it follows that if he has to treat a madman he cures him by bringing on attacks of madness. Hysterical people will have attacks of hysteria, epileptics will have epilepsy, and so forth. He does not say that if a person has, say, a tumour of the leg he will cure it by causing convulsions in the limb, or by using means to stimulate the growth. On Mesmer's theory he ought to have cured the "obstructions" which were at the bottom of all disease by making them worse before they got better. In reading d'Eslon we are forced to the conclusion that he was honest; but it might be said of him, in the words of Autolycus, that "Honesty was a very simple gentleman." He speaks of four children, of 2, 5, 11, and 12 years old, treated by Mesmer. The first was blind from birth. Sitting on a chair he fixed his little hands to a conductor, and there during two or three hours he "gaily" passed his time applying the end of the rod first to one eye and then to the other. An ordinary child would certainly have put the rod into its mouth.

"This interesting creature flatters itself in baby talk that it will see clearly later. Alas! the poor child does not know what it is to see and it is to be feared that it will never know." There is no mention in this case of a crisis, which we have been told is the necessary means of cure. D'Eslon goes on to relate a case of what he calls latent cancer:

> An unmarried woman, aged about 35, had noticed for some years a painful tumour in the lower part of the left breast. She used various remedies without success. Glands enlarged around and at the upper part of the breast which joined and the swelling is nearly bursting the skin. Two painful prominences of leaden colour joined the first, and the nipple retracting formed a blackish circle. It was the seat of stabbing pains. Afterwards the right breast became swollen, with glands scattered round the enlargement. The patient's health was undermined; walking caused great pain, driving was unbearable. She could not lie down in bed, but sat up and got neither sleep nor rest. There seemed to be no alternative but amputation. Mesmer undertook the case. When d'Eslon examined the patient he agreed that if Mesmer prevented the breast from ulcerating he would have wrought a wonderful cure. But he did much more than this, as the patient was infinitely relieved, the outlying glands disappeared, the principal one considerably diminished. The pain became endurable, sleep returned; the woman walked and drove and was altogether in a state which he had not dared to hope for.

It will be noticed that this is not a cure, and, indeed, d'Eslon himself admits this, but he speaks of the consoling effects of the magnetism, and of the hopes it inspires! Time alone can tell, he says oracularly, what will happen. Unfortunately, we hear nothing more about the patient, as is usually the case in these records of wonderful cures.

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* See BRITISH MEDICAL JOURNAL, January 13th, p. 79, and January 20th, p. 133.

† *Biographie Universelle*, vol. xxviii.

‡ See BRITISH MEDICAL JOURNAL, November 27th and December 4th, 1909.

§ It may be noted that this physician's name is spelt "Deslon" by the Commissioners and "d'Eslon" by himself. We have here followed his own spelling, thus giving him the *particule nobiliaire*.

‖ *Observations sur le magnétisme animal*. Par M. d'Eslon, Docteur-Régent de la Faculté de Médecine de Paris, and Premier Médecin Ordinaire de Monseigneur le Comte d'Artois. A Londres, et se trouve à Carlsruhe: Chez Michel Maklot, Libraire and Imprimeur de la Court. 1781.

Another case related is that of a girl of 16, who had been epileptic either from birth or early childhood. She was treated by Mesmer, but was obliged to leave him when he determined to treat nobody in Paris. When he returned she came back to him. D'Eslon can say nothing about the beginning of the disease, but he learnt from trustworthy persons that she had so many fits that she was an object of compassion. Magnetism first, he was told, gave her the advantage of foreseeing her attacks. Then, as he witnessed for himself, they occurred only as crises, hastened by magnetism, and ceased in the intervals. He had seen very violent crises, but they gradually became so much milder that the patient had only to lean her head on the back of her chair, and remain in a fainting state some seconds when she came quietly to herself.

It is significant that her relations took her away. D'Eslon says it is regrettable that this experiment was not pushed to its last stage, as there still remained a "remnant of crisis," and the nature of the disease was such that one might have given it more careful attention.

Another case was that of a man who suddenly became paralysed over one half of his face. He went to Mesmer, and four days afterwards the paralysis had disappeared.

Here, says d'Eslon, is a cure which he hopes will be generally satisfactory. Nevertheless, Mesmer professed to think little of it. He told the patient that he had a very serious symptom, but only because he was vaporous, and he was vaporous only because he was "full of obstructions." He advised the patient to have himself treated more freely, but apparently the advice was not followed.

D'Eslon himself was a patient of Mesmer. He says that for ten years he had been subject to a pain in the stomach, caused by an obstruction in the small lobe of the liver. This frequently caused him inconvenience. On certain days he was obliged to undo the buttons of his waistcoat, in order to breathe easily and without pain. Now, he says, he can strike his stomach without ill effect. He had, besides, headache and a continual feeling of cold about the right temple.

He spoke to Mesmer about these annoyances, and the prophet several times endeavoured to exorcise them by playing the harmonica or pianoforte *at them* (*en leur faveur*), but each time d'Eslon was obliged to ask to be excused the music! This reminds us of the patient who complained that the thermometer in his mouth took so much out of him. He told Mesmer one day that he would be treated if he had the time. Mesmer suggested that he should take his place daily among the patients. "If your cure is not complete you will get a half, a quarter, or an eighth. It will always be so much to the good." The good simple d'Eslon followed this advice, and as a result he had his crises, his evacuations, his forehead peeled, and his pains in the liver and his headaches were much relieved. D'Eslon adds that his case must not be counted in the number of cures. Mesmer himself proved to him that he could not be radically cured, and his reasons seemed to him to be sound. Doubtless they were, though we should like to know something more definite about them.

We next have Mesmer himself in the character of a patient. He felt a general malaise, which lasted several days. This led him to examine himself with care. Naturally, too, he found himself "full of obstructions" (*rempli d'obstructions*). Acting on the precept, "Physician heal thyself," he subjected himself to his own treatment. D'Eslon says oddly that doubtless he treated himself as a friend, for in the space of one month he had four or five hundred evacuations. Vigorous as Mesmer was, it seemed to d'Eslon that he was fatigued, and no wonder. Even a "superman" could scarcely bear thirteen to sixteen evacuations a day for a month without feeling some effect. Mesmer, however, was pleased at the result, saying he had had a narrow escape, and congratulated himself on having taken the ill in time. D'Eslon saw Mesmer have recourse to magnetism afterwards, but only for two or three days. Probably his first experience was enough, or the effect was lasting.

D'Eslon only saw Mesmer treat two cases of acute disease. When Paris was devastated by influenza in 1780 a patient of Mesmer's who had a delicate chest got pneumonia. He was very ill one night, and sent for Mesmer, who would do nothing till the following day. Then the disease was well marked. He had the patient bled—[Here there is a note stating that Mesmer allowed bleeding and emetics, not as remedies, but as means of clearing the primae viae when they were too clogged. D'Eslon had seen him use bleeding, but not emetics, twice in one day.]—and ordered him to drink lemonade. This régime seemed to d'Eslon so extraordinary that he ventured to express his alarm to Mesmer. There would seem to be nothing very alarming in drinking lemonade, and it is not surprising to hear that Mesmer replied in a reassuring tone. The following morning the question arose of a further bleeding. Mesmer doubted whether it was necessary, and d'Eslon thought it very dangerous. Nevertheless, the patient was bled, and lemonade was again given to strengthen him. D'Eslon was anxious; "Always lemonade," he said to himself, anxiously. Truly a very simple gentleman! In the evening Mesmer treated the patient during three-quarters of an hour, and lay down beside him on the bed. An hour later he asked, "Well, my friend, how goes it?" The reply was: "I am pouring with sweat; drops of water are running from my forehead." "All is well," was the reply, "you must drink lemonade"; and the patient drank lemonade. The illness had begun on Thursday. On the following Monday the family, having been informed of the danger, arrived in a state of extreme anxiety. The patient went to meet them, assuring them that he was cured. This strange eventful history ends with the statement that it may be said there was no convalescence.

Another patient, a girl aged 21, had a malignant fever with delirium. The symptoms increased in intensity to the twenty-third day. Mesmer then went to see her. After half an hour she recovered consciousness and asked what had been done to her. D'Eslon replied that no harm had been done. Passing her hand from the top of the chest to the lower part of the stomach, she said, "It is not that. On the contrary I felt as if some one took my disease in his hand and put it away from me." At Mesmer's suggestion she was given lemonade, cream of tartar, and other mild acids. Her consciousness remained, the evacuations were established, and remained regular, and after a short convalescence she was perfectly cured. Eight or ten days after the use of the magnetism she was in perfect health and able to go home.

Here d'Eslon states that a physician said to Mesmer in his presence that he might be wrong in attributing to magnetism the effects felt by the patients since he employed other well-known remedies such as cream of tartar. He does not know if the objection in itself displeased Mesmer, or whether it was the tone in which it was expressed, but he answered sharply, "That is true, sir. I also order them chickens and salad. Now that you know my secret you can use it, and I have no doubt that you will work marvels." Here Mesmer would appear to have lost his temper, and it might well have been retorted to him that chicken and salad would have been just as effectual as his magnetism.

Mesmer was asked if his cures would be permanent. His reply is given as follows:

Two classes of citizens can ask that question—the medical public and the non-medical public. To the doctors I answer: Either I cure radically or you never cure so, for animal magnetism does not operate except by crises, expectorations, evacuations, sweating, and similar means. Now, if you take that away from medicine, you know well that there would be no such thing as medicine. As regards the non-medical public, this answer is not sufficient. It must only know by experience. Therefore, I ask for nothing else than to be put to the test, and that the public may be assured that it is not deceived I am very anxious that the Government should protect, examine, and cause to be examined, the after-effects of my operations, so that neither I, nor the others, may abuse the public confidence.

It would seem difficult, says d'Eslon, to use more peremptory language. It may be observed, however, that what is wanted is something more than peremptoriness. All quacks are peremptory. But they are chary in the production of proof. They challenge examination, but it must only be under conditions laid down by themselves, and these conditions do not afford any warranty that the test shall be scientific or that grounds of proof shall be forthcoming.

Mesmer, continues d'Eslon, said sometimes that his agent is so common and so near us that when the time had come to make his discovery public people would be surprised by its extreme simplicity. Many people are still surprised, not only at the simplicity of the method but at the extreme simplicity of those who look upon it as something mysterious and wonder working.

D'Eslon writes as an enthusiast, and the exuberance of his style does not excite confidence. He admits, however,

that he had never been a witness of any miracle. But he confesses that if such a thing had happened he was the man that would testify to it without hesitation. He adds, "Incredulity or levity would exhaust themselves uselessly in jests and sarcasm; in vain would people cover me with ridicule; I should think I had answered everything in saying, 'I have seen it.'"

We have thought it well to give d'Eslon's evidence pretty fully, because it enables the reader to estimate his power of judgement and the value of his statements.

Next comes Dr. Thouret, another Doctor-Regent of the Paris Faculty, but a man not so credulous as d'Eslon. He shows that Mesmer did not limit his treatment to the production of "crises." *

In addition to the magnetic ritual which has been described, Mesmer acknowledged the usefulness of some internal remedies, cream of tartar being the drug which he employed by preference. In certain circumstances he used baths, bleeding, and purges. He condemned the use of the cautery, however, and the methods of treatment which he used as adjuvants of magnetism were mild and agreeable. Sweating was recognized as a medium for the action of animal magnetism, and means were recommended to stimulate the secretion. The greatest cleanliness of body was enjoined. Tobacco was forbidden, and the care of the mouth, nails, and hair was insisted upon. He recommended amusement, and took parties of patients out of town, giving them the opportunity of enjoying all the pleasures of the country in selected houses. Thouret hints that his stay at Creteil had no other motive. Moreover, the exercise involved by the necessity of the patients going to his house once or twice a day, and the distraction of seeing each other around the tub, must be reckoned as factors.

Besides all this, Mesmer played the harmonica with great skill in such a way as to touch the emotions; in this way he found out who were most susceptible and had the most excitable nervous system. There was also an orchestra which played soft airs while the magnetic rites were being performed around the mystic tub. It was especially people suffering from a sluggish stomach who derived benefit. Persons who had neither the heated imagination nor the excitability of nerves favourable to the action of magnetism were declared to be "anti-magnetic."

Thouret points out that the repeated crises which occur during treatment are not devoid of danger. The women say they are better afterwards, but it is only for the moment. Many doctors—trained observers who have followed the treatment—regard these convulsions as possibly very injurious. He thought Mesmer had founded his procedures on those of Gassner, giving them a form more suited to the age and his nation.

Valleton de la Boissière, a doctor of Bergerac, came forward to refute Thouret.† He published a number of testimonies:

Among the deponents are Brother Simon de Turin, a Capuchin of the Great Convent of Nantes, aged 83, subject for several years to giddiness and frequent headaches, followed sometimes by fainting and suffering sharp pains and a great weakness in the hips and legs which made him unable to walk except with the aid of a stick. After a month of magnetic treatment administered by M. Boissière, a disciple of M. Mesmer, he could dispense with his stick, had a good appetite, and slept well. The headaches, however, had not entirely ceased.

Then there was M. de Limelle de Bouvrage, who for a year suffered from ague, with "obstructions of the liver and spleen" and a disgust for food. After two months of magnetic treatment he got rid of the obstinate fever, the stomach did its work satisfactorily, and his bowels had become regular. He further attested that his daughter, aged 10 years, having also had ague for two years, had been perfectly cured by the same treatment. He declared that: "Assuredly if she and I owe so happy a change in our state to imagination, touches and imitation, blessed for ever and praised be the inestimable inventor of these three delightful methods, certainly far preferable to the b tter and detestable potions with which we have vainly and for so long a time inundated our stomachs."

This is an echo of the words of d'Eslon in his *Observations sur le magnétisme animal*: "If the medicine of the imagination is the best, why should we not avail ourselves of it?" It may be remembered that he recognized before the Commission that the imagination played the largest part in the effects of magnetism, and he added that this new agent was perhaps nothing else than the imagination itself, the power of which was as great as it was little known.

Another case was that of a little girl aged 5, with fever following a chill and bilious diarrhoea. She was from the first treated with magnetism; on the fourth day she was given 6 grains of ipecac., and the next day the fever had gone. There is nothing here but the natural course of a slight fever. She was further treated for three months for enlarged glands in the neck following small-pox, which are said to have yielded to the action of the magnetism, which in this case was doubtless the action of time. She and her father afterwards had measles, from which they recovered without any treatment but magnetism.

These cases would doubtless have done as well with Gull's famous mint water prescription.

Among the other cases related by Boissière are the following: A woman for fourteen months had a tumour of about the size of a pigeon's egg; it was resistant, uneven, and slightly painful. It was entirely dissipated by magnetism, concurrently with an application of hemlock. From this case it is impossible to draw any conclusion as the details given are meagre.

A girl for two years was subject to convulsive movements over the whole body. She was never at rest even in sleep. She fell about, broke things, and could do no work. She had to be made to drink by force, she was extremely thin and of a yellowish colour. She had, of course, consulted the best doctors and used all sorts of remedies. Her chest had become affected. Despairing of cure she submitted to magnetism and had crises nearly every day, sometimes at home. Insensibly the convulsions became less strong and less general, and after four months of treatment she was radically cured.

Boissière says that magnetism helps Nature and hastens its operation in all diseases, especially in small-pox. Then we have reports of cases of rheumatic pains, indigestion, deafness, scrofulous ulcers of malignant character in the groin, diseased bone, and so on through a series of patients suffering from "obstructions" of the liver and spleen, with headache, billiousness, and so forth. A case of hip disease, with discharging sinuses, is recorded, in which a perfect cure was effected after ten months and a half of treatment. The diseased thigh was shorter than the other, owing to the different operations that had been performed. But this deformity is pronounced to be incurable even by magnetism. This cure, we are told, proves that animal magnetism has an action that would vainly be sought from ordinary treatment. This statement appears to prove that the worthy but credulous Boissière was somewhat ignorant of surgery. It is not altogether rare, however, even at the present day, for a cure due to the operation of time with the help of surgery, to be attributed to some miraculous agent or to some form of quackery.

In a *Supplément aux Deux Rapports de MM. les Commissionaires*, etc., over 100 cases intended to illustrate the effects of magnetic treatment are related. It is the familiar story of pains in the head, sciatica, convulsions, "paralysis," "rheumatism," "glands" in the breast, and especially "obstructions" of the spleen, and so forth, which figure so largely in all reports of Mesmer's "cures." "Obstruction of the liver" used to be said by Avicenna in his instructions to pupils to be a disease which would always satisfy the mind of an inquiring patient. It has now followed obstruction of the spleen into the limbo of those vague conditions which the physicians of old found so convenient. Another thing notable in these testimonials is the absence of a large number of common diseases—notably consumption and cancer—and the frequency with which a neurotic condition of the patient is either clearly manifest or may plausibly be conjectured.

The author of a frankly hostile work,‡ who appears to be thoroughly well informed, though some allowance must be made for his strong bias against Mesmer, cites a number of cases, with the names of the patients, which were claimed as cures by Mesmer, but which, he says—some-

* *Recherches et doutes sur le magnétisme animal*, par M. Thouret, Docteur-Régent de la Faculté, et Membre de la Société Royale de Médecine. Paris: Chez Prault, Imprimeur du Roi, quai des Augustins, a l'Immortalite. 1784.

† *Lettre de M. Valleton de la Boissière*, médecin à Bergerac, *A. M. Thouret, médecin à Paris*; Pour servir de réfutation à l'extrait de la Correspondance de la Société Royale de Médecine, relativement au magnétisme animal. Cette Lettre est suivie d'un précis des cures opérées, à Nantes, par les moyens magnétiques. Philadelphie. 1785.

‡ *L'Antimagnétisme.*

times after a temporary subjective benefit remained as they had been before. Among these is the famous case of the Swiss man of letters—M. Court de Gebelin—who firmly thought he had found a healer in Mesmer, but who died in the prophet's house. Of him it was said in a contemporary epigram that *Il est mort guéri*. But on the body being opened it was found that there was organic disease of the kidneys, on which the magnetism had had no effect. There is nothing to be said about the cases related by believers but that they are of the same kind which make up the mass of cures wrought by faith healing. The explanation of these "cures"—even if it be granted that the facts were in every case accurately reported—had already been given by the Commissioners.

The End of Mesmer.

The reports of the Commissioners and of the Royal Society of Medicine had the effect of destroying the vogue of Mesmer. Some of his devotees, indeed, endeavoured to defend him, but Mesmer himself judged the situation more accurately, and soon afterwards left France. He carried with him the money of the subscribers, to whom he had not disclosed his secret; adding insult to injury, he accused them in a pamphlet of having robbed him of it. It is said that he spent some time in England under an assumed name. Then he went to Germany, where he published a new exposition, which was coldly received. He retired to Switzerland, and died in obscurity at Meersburg on March 15th, 1815.

Of his later days nothing definite seems to be known. A huge accretion of literature became incrusted around the subject of Mesmerism. Here and there we get glimpses of the man. Dr. Egg von Ellekon, who made his acquaintance in 1804, relates* that he once asked Mesmer why he always ordered his patients to bathe in river and not spring water. The answer was, Because river water is exposed to the sun's rays. To this Dr. Egg replied, that he knew river water was sometimes warmed by the sun, but not so much that one was not obliged frequently to warm it still more; therefore, he said, he did not see why warm water should not often be preferable. Mesmer's answer must be quoted in his own words:

> Dear doctor, the cause why all water which is exposed to the rays of the sun is superior to all our water is because it is magnetized. Twenty years ago I magnetized the sun!

Egg describes Mesmer as an old man of a venerable appearance, talkative—especially on his own merits and discoveries—and, whenever the practice of magnetism was mentioned, assuming an air of mystery which repelled the honest inquirer. He was never tired of sounding his own praise, or of dwelling on the benefits which his magnetic discoveries had conferred on mankind. In his sitting room hung a picture in which he was represented as the good genius of the world, celebrating the triumph of animal magnetism over medical science. He was in the habit of presenting those who made his acquaintance with a print of himself under which were some French verses extolling him in the most fulsome terms. Like Mrs. Eddy and other prophets of new religions or systems, he was accustomed to speak with the greatest contempt of those who differed from or opposed him. He expressed the greatest indignation against more recent adepts in magnetism, whom he called "somnambulists," accusing them either of being unable to understand him owing to their stupidity, or of having betrayed him. He complained bitterly of the persecution he had suffered at the hands of the Faculty, and denounced doctors as poisoners. He said once to Egg that his "expectation" of life had been shortened by ten years because he had once been bled by a surgeon when he was young. Yet there is evidence that he himself used bleeding in certain cases in his practice. Midwives and man-midwives he classed with doctors as privileged murderers of mankind. Why his wrath was so fierce against these harmless necessary persons is not apparent. The tying of the umbilical cord he held to be the cause of small-pox and of all hepatic diseases, under which he classed almost every chronic malady. Outside his own theory, he knew and cared about nothing. His reading was confined to two or three newspapers; of the progress of science he was altogether ignorant, and even his political opinions were tinged by his peculiar views. He went so far as to advocate a political revolution and reorganization of society on magnetic principles. Are we witnessing the beginning of the triumph of Mesmerism in politics at the present day?

Mesmer, like Cagliostro and Saint Germain, made his appearance just at the time most favourable for the success of any prophet of the marvellous. It was an age when, as as Carlyle says, "riding on windbags will men scale the Empyrean."† Among these windbags he counts Mesmer.

"Or observe Herr Dr. Mesmer, in his spacious Magnetic Halls. Long-stoled he walks; reverend, glancing upwards, as in rapt commerce; an Antique Egyptian Hierophant in this new age. Soft music flits; breaking fitfully the sacred stillness. Round their Magnetic Mystery, which to the eye is mere tubs with water,—sit breathless, rod in hand, the circles of Beauty and Fashion, each circle a living circular Passion-Flower: expecting the magnetic afflatus, and new-manufactured Heaven-on-Earth. O women, O men, great is your infidel-faith! A Parlementary Duport, a Bergasse, D'Espréménil we notice there; Chemist Berthollet too,—on the part of Monseigneur de Chartres.

"Had not the Academy of Sciences, with its Baillys, Franklins, Lavoisiers, interfered! But it did interfere (August, 1784).

"Mesmer may pocket his hard money, and withdraw. Let him walk silent by the shore of the Bodensee, by the ancient town of Constance; meditating on much. For so, under the strangest new vesture, the old great truth (since no vesture can hide it) begins again to be revealed: That man is what we call a miraculous creature, with miraculous power over men; and, on the whole, such a Life in him, and such a World round him, as victorious Analysis, with her Physiologies, Nervous-systems, Physic and Metaphysic, will never completely *name*, to say nothing of explaining. Wherein also the Quack shall, in all ages, come in for his share."

* *Animal Magnetism; its History to the Present Time. With a Brief Account of the Life of Mesmer.* By a Surgeon. Published by G. B. Dyer, 24, Paternoster Row, London. 1841.

† Carlyle, *French Revolution*, vol. i.

COLLOIDAL SOLUTIONS AND ARTIFICIAL ENZYMES.

Among the many departments of scientific work in which the researches of recent years have led to notable progress, two which are of considerable interest and importance are the study of colloidal solutions and that of enzymes and enzyme action. These branches of investigation are not altogether independent of each other, and in particular they converge on questions of the chemistry of physiological processes. In this field it is claimed by some that the results already arrived at are of great importance to practical medicine, and it will not be out of place here to give a brief summary of this part of the subject.

The systematic study of colloids was first undertaken by Thomas Graham, and various papers on the subject were published by him in the years 1861 to 1864. In investigating the properties of substances in solution, Graham found that the bodies studied could be arranged in two classes, to which he gave the names *crystalloids* and *colloids*. The most characteristic and constant difference between them was that the former can diffuse, when in solution, through a membrane of parchment or similar material, while the latter cannot. The terms are still retained with the same general meaning as that given by Graham; but instead of considering crystalloids and colloids as different classes of bodies, investigation has shown that it is more correct to speak of the crystalloidal and colloidal states of matter, since a large and increasing number of substances have been obtained in both kinds of solution. Graham used the term *sol* to denote a colloidal solution, and this term is now in general use in this sense, such solutions being called *hydrosols* when water is the medium, *alcosols* when the solvent is alcohol, and, generally, *organosols* when the solvent is an organic liquid. The coagulated form of a colloidal substance is called a *gel*, and a gel formed from a hydrosol and retaining water is a *hydrogel*. A sol may be converted into a gel in a variety of ways, two of the most usual being the addition of an electrolyte and the application of heat; in some cases a reversal of the conditions restores the sol form of the colloid, but in other cases the gel cannot be redissolved by any such means. In accordance with their behaviour in this respect, colloids may be classified into reversible

and irreversible, and the distinction is of some practical importance.

Some of the most interesting of the sols which have been studied in recent years have been those of the metals; gold, platinum, silver, mercury, and many other metals have been obtained in the form of hydrosols, while others, such as the alkali metals, have been obtained as sols in certain organic solvents. An impure sol of silver was prepared as long ago as 1839 by Wöhler, although its real nature was not understood by him; the method used in preparing it—heating silver citrate in a stream of hydrogen—gives substantially the same product as the "colloidal silver," or "collargol," which has found its way into medicine in recent years. Another metal which has found some therapeutic application in the form of a sol is mercury, and colloidal calomel is also employed. A more familiar example, now much less used than formerly, is the so-called "dialysed iron" (liquor ferri dialysatus), which consists of a hydrosol of ferric hydroxide. The addition to this of a very small quantity of sodium sulphate, or of some other salt having no *chemical* action upon it, causes "gelatinization" of the liquor, or, in other words, converts the sol to a gel; and the other sols just alluded to show a similar behaviour on the addition of a trace of an electrolyte. On the other hand, many of the common colloids only show reversible changes; a fairly strong solution of gelatin, for example, sets to a "solid" or a gel on cooling, but resumes the sol form on again raising the temperature; a large excess of salt will throw out the gelatin, but on washing away the salt it can be redissolved. An important fact is that in some cases if the sol of an irreversible colloid is mixed with the sol of a reversible one the mixture is reversible.

Colloids differ from crystalloids, not only in being non-diffusible, but also in the fact that they have no osmotic pressure, or almost none; hence the boiling and freezing points of the solvent are not altered by the colloid as they would be by the presence of a dissolved crystalloid. It is not possible at present to make positive assertions as to the actual condition in which a substance exists when in colloid solution, but a good deal of knowledge with regard to the matter has been gained in recent years by the use of the ultramicroscope in the form given to it by Siedentopf and Zsigmondy. A pencil of convergent rays of light is passed into the solution under investigation, and the path of the beam is examined, against a black background, with a strong microscope. In the case of a perfectly homogeneous liquid nothing is seen; the light passes without diffraction or reflection, and none of it, therefore, is diverted into the microscope. But if the liquid contains solid particles in suspension (which may be far too small to be detected by ordinary microscopical examination in a bright field), some of the rays will be scattered by reflection at the surfaces of the particles; if they are sufficiently numerous and of sufficient size, the amount of light so scattered may be sufficient to be perceived by the unaided eye and the path of the rays will then appear luminous; on examining it with the microscope the luminosity may be seen to be not continuous, but to proceed from numerous small particles, which reflect portions of the beam.

A good analogy is furnished by the familiar fact that if a pencil of rays of sunlight passes through a hole in a shutter into a darkened room in which the air is perfectly still and pure, the rays are invisible from a point at the side of their path, and are only perceived by the image formed on the opposite wall; but if the air has been recently disturbed the particles of dust floating in it scatter so much of the light that its path appears luminous from a little distance, while closer inspection shows the particles of dust as brilliantly illuminated objects, although they become invisible if light is freely admitted into the room.

If ordinary distilled water, even after filtration, is examined with the ultramicroscope, it is seen to contain numerous suspended particles, and it is only after standing undisturbed for weeks, in order that they may subside, that it is obtained tolerably free from them. If a colloid solution is examined with the ultramicroscope it usually shows numerous particles of varying sizes in active movement; in some solutions, however, only a general luminosity has been observed, discrete particles not being distinguishable. When particles are suspended in a liquid of greater or less density than themselves, motion is always observed, and has received the name Brownian movement. The movements to be observed in a colloidal solution with the ultramicroscope, however, have not the characters of the usual Brownian motion. Zsigmondy thus describes his first examination of a metallic hydrosol, in which he expected to see the ordinary Brownian movement of particles:

> How entirely erroneous was this idea! The small gold particles no longer float, they move, and that with astonishing rapidity. A swarm of dancing gnats in a sunbeam will give one an idea of the motion of the gold particles in the hydrosol of gold. . . . This motion gives an indication of the continuous mixing up of the fluid, and it lasts hours, weeks, months, and, if the fluid is stable, even years. . . . The smallest particles which can be seen in the hydrosol of gold show a combined motion, consisting of a motion of translation by which the particle moves from 100 to 1,000 times its own diameter in one-sixth to one-eighth of a second, and a motion of oscillation of a considerably shorter period, and on this account the possibility of the presence of a motion of oscillation of a higher frequency and smaller amplitude could not be determined, but is probable.

It is possible to arrive at approximate measurement of the particles thus rendered visible; in colloidal solutions their diameter is from 20 $\mu\mu$ down to about 1 $\mu\mu$ (1 $\mu\mu$ = one millionth of 1 mm.). They thus approach in smallness the limits which have been assigned from other considerations for the diameter of molecules. The motions which the ultramicroscope reveals are always going on, and were found to be undiminished after keeping for months. A statement of Graham's that "the colloidal is, in fact, a dynamical state of matter, the crystalloidal being the static condition; the colloid possesses Energia" is thus shown to be well founded.

Sols of metals may be prepared in several ways, one of the simplest being that introduced by Professor Bredig of Heidelberg in 1898, in which a current of electricity is passed between poles of the metal whose sol is required, below the surface of pure water. Some disruption of the metal of the kathode occurs, and the particles which fly off from it assume the colloidal state, the liquid becoming coloured after a short time and then consisting of a hydrosol of the metal. Sols of gold, silver, and platinum, containing about 0.004 or 0.005 per cent. of the metal, were so prepared, and the method has been modified and extended to other cases by Svedberg since 1905. The metallic sols so obtained are extremely sensitive to traces of electrolytes and to the influence of heat, the change to gels being irreversible. They possess some remarkable properties, before discussing which it will be necessary to refer to enzyme action.

The natural enzymes form a large group of bodies occurring in animal and vegetable organisms, characterized by having the power of inducing chemical changes in other bodies without themselves becoming changed; in other words, they are catalytic agents.

Various hypotheses have been put forward to account for catalytic action, but no one of them has been proved to be true to the exclusion of the others, and there is good reason to believe that the mode of action is different in different cases. One of the proposed explanations is that the catalyst acts by means of molecular vibrations; the molecules of the substance acted on are supposed to be already in a state of vibration, which becomes increased by sympathetic vibrations in the catalyst to such an extent that the vibrations pass the point of equilibrium, and the substance accordingly undergoes decomposition. According to another view, the substance acted on first forms a compound with the catalyst; then this compound breaks down more completely than merely into its two components, fresh products being formed, and the catalyst set free in its former condition. A third hypothesis is that the acceleration of a reaction caused by a catalyst is due to the altered solubility of the substance acted on, and to its having a different reaction velocity when dissolved in the medium *plus* the catalyst. Whatever the explanation of catalytic action may be, a remarkable fact about the organic catalysts known as enzymes is that the range of their activity is extremely limited, so that a given enzyme which can cause the decomposition of some one substance is often quite powerless to effect the similar decomposition of some nearly allied substance; in other words, their action is specific in a high degree. For

example, cane sugar is hydrolysed into glucose and fructose by the catalytic action of the enzyme invertase, which is unable to exercise a similar action on maltose (an isomer of cane sugar); for the corresponding hydrolysis of this the presence of another enzyme, maltase, is required. A few of the known enzymes can resolve a number of different bodies; thus emulsin induces the decomposition of any of the glucosides amygdalin, arbutin, helicin, salicin, phloridzin, daphnin, and others; but, as a rule, one enzyme can cause decomposition of one particular body and of no others, even stereo-isomerism being in many cases a sufficient difference, so that one of a pair of stereo-isomers is acted on by a given enzyme, while the other is not. Thus, whatever may be the mechanism of enzyme action, there must be some very close relation analogous to that between key and lock, between an enzyme and some grouping or structural arrangement in the molecule attacked.

Enzymes play an enormous part in the chemistry of the physiological processes of both plants and animals. That this is the case with the digestive processes has long been known, but further research has extended the observation to most of the chemical actions of living cells. This has necessarily meant a very large increase in the number of individual enzymes known; but it is probable that no enzyme has as yet been prepared in a state of purity, the fact that they are all colloids making purification extremely difficult, while it also makes the establishment of definite criteria of purity a much less easy matter than it is in the case of crystalloids. The fact that the natural enzymes are all colloidal substances leads naturally to the inquiry whether any other colloids, not produced by living matter as enzymes are, possess catalytic powers similar to those of the latter; and it is found that the simplest of all known colloids, the hydrosols of certain metals, possess in a high degree some properties resembling those of enzymes; and some enthusiastic workers on this subject have applied to them the names of "metallic ferments" or "artificial enzymes."

Although an enzyme has usually some specific and characteristic power of acting as a catalyst towards some one substance, many are capable of acting as catalysts towards certain other bodies also, the changes which result not being specific but being induced by many enzymes indifferently. The most general of such catalytic actions is that which causes hydrogen peroxide to break up into water and oxygen: the many enzymes capable of doing this are called peroxidases. This property is shared by the hydrosols of gold, silver, and other metals; but since the decomposition of hydrogen peroxide may also be induced by finely-divided metals in the solid state, such as platinum black, it must not be too hastily regarded as evidence of an enzyme-like nature in the sols. Another group of natural enzymes, called oxidases, are able to cause oxidation by means of the oxygen of the air, and some colloid mineral substances have been found to exhibit a similar action. Neilson has shown that colloidal platinum and platinum black are able to cause hydrolysis of starch and decomposition and resynthesis of fats. But no case appears to have been recorded in which an "artificial enzyme" has shown a specific power of catalytically inducing decomposition of only one substance, or even a small group; on the contrary, their catalytic power is always far more general than that of natural enzymes.

A striking similarity between enzymes and some inorganic colloids is seen in their sensitiveness to the inhibitive action of minute traces of certain substances; the proportion of catalyst to substance acted on, and of the inhibiting substance (which has been called a paralysator) to the catalyst, are very small—for example, a solution containing 0.00001 gram of colloidal platinum per c.cm. acting upon a solution of hydrogen peroxide containing 0.06 gram per c.cm., converted more than half of it into water and oxygen in forty minutes; the addition of 0.000000014 gram of hydrogen cyanide per c.cm. reduced the rate of change by one-half.

This resembles the effect which has been found to be produced upon living organisms by minute traces of certain metals in distilled water, traces far too minute for detection by any chemical analysis. Thus, mere immersion of a strip of clean copper in a vessel of distilled water containing a number of tadpoles, which would otherwise live in it for several weeks, is sufficient to kill them in a few hours. At the last *soirée* of the Royal Society (June 14th, 1911) Mr. Henry Crookes exhibited a number of cultures of *B. phosphorescens*, and photographs of cultures of *B. coli communis* and *B. prodigiosus*, showing the germicidal effect of certain metals. Nutrient fish-agar was poured into Petri dishes, each containing a small square of metal, and when the agar had set the surface was inoculated with the bacilli; after twenty-four hours they were found to have grown freely except in a zone round the metal. It is interesting to note, however, the differences between different metals in this germicidal effect. Gold, platinum, and a few others had no such action; copper, bismuth, zinc, etc., had a slight germicidal action; and silver and mercury were among those showing strong germicidal action.

Professor Albert Robin of Paris, in a treatise entitled *Les ferments métalliques et leur emploi en thérapeutique*, has described the results obtained in a number of therapeutic trials of metallic hydrosols, prepared according to the method of Bredig described above. He refers to the theory that the catalytic powers of enzymes are not due directly to their constitution, but to their molecules being in a state of vibration and capable of communicating such vibration to other substances, and so to cause them to undergo chemical change; he expresses his own view that metallic sols, which he calls metallic ferments, act by virtue of the intense vibratory movement of their extremely minute particles. According to his experience the properties of the sols *appear* to be identical, whatever the metal dissolved; this is slightly qualified by the statement that he thought he had obtained more regular therapeutic results with palladium than with platinum and gold, but he found that the solutions of the two latter which he was using at the time underwent alteration more rapidly than the solution of palladium, and he ascribes the superiority of the latter solution to this fact. In regard to germicidal action, the experiments by Charrin, Monnier-Vinnard, and others which are quoted were all made with colloidal solution of silver, and showed a very high germicidal effect on pneumococcus, staphylococcus, and several other organisms; it would have been interesting to know how far similar properties were shown by gold and platinum, in view of Dr. Robin's statement that they did not appear to differ therapeutically, and the great differences in the germicidal actions of the metals themselves as shown by Mr. Crookes's experiments. In his therapeutic tests Dr. Robin employed hydrosols of silver, gold, platinum, palladium, and an organosol containing manganese combined with albumen and alkali. The hydrosols were prepared by Bredig's method; as already noted, they are immediately converted into gels by the addition of an electrolyte or by heat, and consequently they cannot be employed in isotonic solution, nor can they be sterilized by boiling; the author states, however, that these hydrosols should alone be used, and not those preparations in which the addition of a reversible colloid has produced a more stable mixture. His words on this point are emphatic: "It is necessary to call the particular attention of practitioners to the fact that it is impossible to use in practice with advantage metallic solutions said to be stabilized by an organic colloid, sterilized by heat, and containing sodium chloride or other salts designed to render them isotonic. There are, in fact, a number of commercial preparations thus produced the use of which can only lead to failure or to incomplete results by which therapeutic agents of the highest value are discredited." He also insists that Bredig's silver hydrosol is quite a different thing from collargol, and gives a list of reactions in which they behave quite differently; it is interesting to note, however, that Zsigmondy examined Carey Lea's colloidal silver with the ultramicroscope in comparison with Bredig's, and found that at suitable dilutions, the number, size, and motions of the particles were much alike in both.

An account of the results recorded by Dr. Robin would be beyond the scope of the present general summary; it will suffice to say that he describes in some detail the use of these colloids in various diseases, including pneumonia, acute rheumatism with complications, meningitis, typhoid fever, scarlatina diphtheria, and puerperal septicaemia, in which the results appear to have been very favourable, and Bright's disease, secondary syphilis, pulmonary tuberculosis, and cancer, in which no benefit was obtained.

THE NEED FOR CO-ORDINATION OF CLINICAL AND LABORATORY WORK.

A DISCUSSION on this subject took place at a meeting of the Forfarshire Medical Association held in University College, Dundee, on Thursday, January 18th; Dr. ANGUS MACGILLIVRAY presided.

Dr. ARCHIBALD LEITCH, introducing the discussion, said there was a gulf between clinical and laboratory endeavour, and the separation was to the interests of neither. An intimate association would be for their mutual good. There was a suspicion that the laboratory worker, dealing only with the scientific aspect of disease, regarded the clinician, dealing with the art of medicine, as one performing an inferior round of service to his kind. If that suspicion existed it was ill grounded. The clinician, on the other hand, feeling that he was in close contact with actualities, might sometimes regard the pathologist—using the term broadly—as being akin to those philosophers of Laputa who had one eye turned internally on themselves and the other fixed on the zenith, and who could only be brought into a proper appreciation of their surroundings by a tap on the head from their attendant flappers. But these extreme views, it must be admitted, were a rational outcome of our present inco-ordinated system. They could name certain institutions devoted to medical research which had no clinical connexions, and too often their researches were lost or were as seeds cast in unfrequented ground, perhaps years afterwards springing into flower that a wayward traveller in the by-paths might find and cull. Their results did not enter at once into general currency. The scientific investigator spoke mainly to others of his kind; but was not that true also of the clinician? They had no common ground. There were large clinical hospitals with no institute for medical investigation of diseases. But in the majority of cases they had the conjunction of wards and laboratories that went to make up the complete hospital. At the present time they lacked co-ordination. If they looked back over the great advance in past medicine, even within fifty years, all must recognize how much they owed to what one might call extra clinical endeavour and to the play upon that of the clinical mind. They would notice, too, how fruitless were the attempts of the pure clinician to work out into the unknown. It was but natural that one devoid of the only means of gathering new facts by experiment should have recourse to arm-chair speculation which was absolutely harmful in medicine. Let them note the enormous advance in surgery and recognize that facts gained in research, applied by a man who had his eyes alight, brought about the revolution. The father of antiseptic surgery—pathologist first and clinician afterwards—was an example of co-ordination by and in an individual. Our whole system of public health was a co-ordinated effort, and if its advance was due to one thing more than another it was to the researches of the bacteriological laboratory. The authorities under the Insurance Act would suffer financially by disease and profit with health, and, however it might eventuate, medical practitioners and practising specialists were bound to become more and more preventers of disease, trying, at least, to stifle it at its commencement, rather than palliate it in its late manifestations. At central institutions every practitioner ought to have the facility for prosecuting study, elsewhere impossible or inconvenient. The laboratory was more useful than a book. It was a dream of Plato that the time would come when kings would be philosophers and philosophers would be kings, and it might be as much of a dream to wish that all physicians were pathologists and all pathologists physicians. It was rarely possible for one man to be pre-eminent in both. If in medicine the inevitable specialization of effort prevented an equal combination, it was surely possible that each might take one as his principal aim and the other subservient, so that they might dovetail into each other's domains, to their mutual help. Combination was more effective than separation, and they needed a connecting link between the clinician and the research worker—a department where they had common ground. He would like them to consider the advisability of the clinician and the research worker meeting on the common ground of "clinical pathology," and, secondly, the possibility of dovetailing in problems where the special knowledge of each might be helpful to the other. Let them erect in their minds an institution for the purpose. Take the Royal Infirmary. It was a clinical institution primarily. It might be perfect in that respect or it might be just short of it. He did not know and had no opinion. But there they could build the supplementary part of the scheme. They might build, first of all, a flat for the department so absolutely necessary for the clinician—the department of the clinical pathologist—giving respectable facilities for the prosecution of his work, and especially a reasonable staff. They might expect him to be partially supported as a teacher training a younger generation in newer methods, but from the clinical part of the infirmary more would be expected, because he would give it more. In his *post-mortem* room, acting both as physician and pathologist, he would correlate the clinical with the pathological features. He could properly appreciate both, and his records would not be archives of oblivion. He would see the terminal phases of that series of life pictures which in the future they hoped to blot out fully, but of which the clinician might have had only a brief, a partial or obscured view of one particular phase. The clinician and research pathologist must together take things step by step back to origins, and get them "before they were." Laboratory methods of diagnosis, microscopic, bacteriological, and clinical diagnosis would furnish more work. The clinical pathologist would carry out in actual practice the methods which research pathologists had experimentally shown to be possible. He would utilize the material good that had emerged from more theoretic investigations. Having housed the clinical pathologist and given him work to do, let them put on another story. They were getting nearer the heaven of pure research, and would give this flat to their research bacteriologist. They would not buy him cheaply, but good; and they would provide him with work—any amount of it. They gave him the whole range of known and suspected microbic diseases, and they told him truthfully how little they knew. They asked him to turn his eyes away from anthrax and cholera and to work at acute rheumatism. They told him that it caused 75 per cent. of all heart diseases in later life, and that heart diseases were very common. They said to him that first of all they must find the cause, and it was for him to do it. When he had found that he might devote some attention to the way in which it might be combated or prevented, or how the body's fight against it might be fortified. They led him along and showed him pneumonia and the heavy toll it exacted. They told him that they knew the cause and they knew the result, but that there their knowledge ended and it was for him to fill in the stages between. They showed him tuberculosis and told him it decimated their young men and was very costly to their cities. They knew the cause, they knew many of the steps, and they knew how to prevent it and often to cure it, but that there was much more to know, and they whispered that if he did some useful work in it perhaps the Chancellor of the Exchequer would make it worth his while. They told him that the ophthalmologist would like to do some eye work in his laboratory, but that as he, the bacteriologist, knew nothing whatever about eyes, he would have to take the advice in regard to some things from the ophthalmologist, and in exchange must lend him the aid of his laboratory lore. They would introduce the dermatologist, and, though it might not be possible to get him to understand the sesquipedalian phraseology of the physician, he might be able to show him how to get to work towards a solution of his problems. They would introduce the gynaecologist and leave them alone without a word. They would bring along the physician and the surgeon and state the special problems that interested them, and they expected him to advise them, for he had special knowledge where they failed, and they had knowledge where he was completely ignorant. They would leave this department full and busy, and would build a third flat for workers investigating other diseases not of microbic origin. The day was past when pathology was a study of morbid anatomy; it was morbid physiology. All the workers of the institute would co-operate with each other—co-operate with the hospital staff and the general practitioners—and duplication of effort would

be avoided. He would not suggest that they should have a superintendent and various underlings. The best work that was done, especially in Germany and in France, was done where there was more or less a scientific republic. They were all working towards a common end; let them build together, let them understand each other, and not be like the tower-builders of Babel, whose work came to naught because they spoke in myriad tongues. Much of their work might be scaffolding that in time would go down, but it would leave the solid fact, a monument more enduring than brass, which the wind and the biting rain would be powerless to destroy.

Dr. MACGILLIVRAY said he had always thought that specialists were like the spokes of a wheel; the more they specialized the more they diverged. What they wanted was that specialists should meet together and assist one another. They had in the pathological department of the university an efficient means of teaching scientific pathology to their medical students and to their research students. Also at the infirmary a most effective clinical pathological laboratory was mainly devoted to teaching, but it must be clearly understood, before the discussion proceeded further, that both these institutions were at the service and the disposal of any person in the district who cared to work there. If Dr. Leitch, with the aid of Mr. Lloyd George, could bring his castle in the air to terra firma, it would be one good thing to be said in favour of the Insurance Act. As regarded private laboratories, every one knew that these were exceptionally costly, and he spoke from experience when he said that they were an enormous expense not only in money, but in time, brains, and energy. All they should need to do was to go to the director of studies, who would show them how to do the piece of research necessary. It was perfectly simple, if seen. He could not have carried on the research he had just completed had it not been for the kindness of Professor Sutherland and his staff and of Dr. Milne. Any man who had had gone through the curriculum and who saw a thing done with his own eyes could do it himself. Laboratory methods were perfectly simple if they saw them carried out. They had in their midst an admirable Clinical Research Association; but it had always struck him that they did not learn work from it; they got the results, but the real interest was doing the work for themselves. The scheme proposed would not interfere with present arrangements; it would bring the clinical side of their work into line with the pathological laboratory, and if Dr. Leitch could bring about that happy consummation, he deserved every encouragement.

Professor STALKER said he was wholly in sympathy with Dr. Leitch regarding the need for co-ordination of clinical and pathological work. It was a realized dream in many parts of the world, more particularly in Germany, but still far short of even approximate realization here. They were too much in the habit of looking for immediate results in this country. They could not hope for dividends immediately in this matter; but they could quite realize the sums of Dr. Leitch's conclusions and the irrefutable basis on which his scheme was built. If they were put under the guidance of rational ideas, and not merely hurried forward to a rough-and-ready practice, many of the lecturer's promises would fulfil themselves. They had been already working forward within the light of Dr. Leitch's ideas; but perhaps it was in a hand-to-mouth fashion—here a little and there a little; and in bringing the clinical observer and the pathologist into closer union Dr. Leitch was striving to show them that they should do so much more systematically and more as part of their routine business, recognizing that the clinical observer was useless without the scientific observer. They had to recognize that an immense portion of physiology suffered from its dissociation from medicine, and there were many directions in which the pathologist could work for days, weeks, months, and even years at long distances from the clinical observer, out of his sight altogether. There was continual need of the clinical observer coming more and more into co-ordination with the pathologist.

Dr. TULLOCH said he was somewhat pessimistic over the ideas of the lecturer. In the first place he was very much mistaken if they would lift the general practitioner up into any such ethereal sphere. His time and the emoluments of his office scarcely warranted that angelic attitude. He felt that there was some go-between needed between the general practitioner and advanced knowledge, and yet he would not keep too close to the heels of the theorist, because he was apt to kick occasionally; for though there was truth to be got, there was a great deal of error, and if the practical man at the bedside was to do his patient good and not harm he had better follow at a respectful distance. At the same time, if they could bring about a closer union between the man at the bedside and the man with the microscope, it would be a very good thing. But he felt that the man at the bedside could get most of all he required done for him. He could send his specimens, and for a very small sum could get investigations and reports such as he could not himself attain even if he devoted a considerable part of his time to laboratory work. The clinician had the good of his patient to consider. He was not simply an educationalist, not even an educationalist for himself. He must look to the curing of the patient. The study was very interesting, but the curing of the patient was the first consideration. With the main idea that there should be closer union between the clinician and the laboratory expert he agreed. He thought that scarcely any practical good could immediately come out of the scheme, because it was not sufficiently formulated.

Dr. MACKIE WHITE said he was entirely in sympathy with the scheme which had been mooted by Dr. Leitch, and although, as Dr. Tulloch said, it was somewhat inchoate at present, they must begin sometime, and it was more than time they were begun in that work. The fact was we were absolutely an insular nation as regards the whole question, and if they went to a German school and had a talk with the Germans who were busy working at that sort of thing, they could not help seeing that there was a veiled contempt for most of the work being turned out in our own country with regard to these matters. The relationship of the patient and practitioner was a thing by itself, and there was no reason why that relationship should be anything but improved by having in their midst such an institute as Dr. Leitch had suggested. In fact, before long they would be absolutely forced into it, and the great pity was that they had sat still so long doing so little themselves. Discussions at the Forfarshire Medical Association and Branches of the British Medical Association had had little tendency to educate the public, yet rich men were only too glad to be able to spend their money for scientific purposes if they were assured that the money was being well spent. If they put before them the facts as to what was being done in Germany, Italy, or any other country where much attention was paid to scientific developments of medicine, he was quite sure these men would be ready to assist. They would not make a few comfortable cribs for men to do nominal work. Dundee was a young medical school, and he did not think its record was altogether bad for the twenty-five years it had been in existence. When the school started they were in hopes that, free as it was, or should have been, from all binding traditions, they would avoid the old shackles and devote themselves more to clinical, hospital, and laboratory work, upon which the new medicine was being founded. Medicine would advance without them, but it was a great pity to be left out in the cold and to have to go to others for the cure of cholera and tuberculosis, instead of having men in their midst who might do the work as well as those of any other country.

Professor KYNOCH said he wanted it to be distinctly understood that the staff of the Royal Infirmary had been aware of the importance of the subject which Dr. Leitch had brought before them, and, persistently, for years they had kept the matter before the directors of the Infirmary and the University authorities; and though he did not say that they had anything like a three-storied building at the Infirmary, they had achieved something, and the Dundee Medical School offered its students adequate facilities. Under the direction of Dr. Milne, at the Clinical Laboratory, they received all the instruction which it was possible for them to retain in their student career, and if they wished to follow out their research work, the laboratories in the Medical School were at their disposal. Men in country districts could not be expected to come and carry out experiments for themselves, and the Clinical Research Association filled a very great want. As to Germany, he knew something about

German hospitals and laboratories. They were told that they could not compare with German work, and he said it was not because the Germans had got fine lab ratories or fine institutions; they worked for the love of their subject. He thoroughly supported everything Dr. Leitch had said, but he wished to emphasize that the work was being carried on in a quiet way, not in elaborate buildings, but with fair facilities, which he would like to see improved on the lines Dr. Leitch had so admirably pointed out.

Dr. R. C. BUIST said he did not at all under-estimate the advantages they at present possessed, but as for being satisfied with them he could not possibly use that term. Any afternoon they liked to look into the pathological laboratory they would find the general practitioner at work qualifying in public health or bringing material from his own cases and applying methods he had learnt in the laboratory. But the whole school, clinical and pathological, was in great need of a large increase of staff. Speaking for himself, he had had through his hands during the past twelve years an enormous amount of material which, owing to the want of staff at his disposal, he had not been able to utilize, though it contained promise of considerable contributions to practical medicine. He pointed out that members who recalled the address which Dr. Bruce of Murthly had delivered would remember the valuable results of the co-ordination of laboratory and clinic in mental disease; and it was also within the knowledge of members of the Association that of the men who had gone out from the Dundee School more than one had distinguished himself by his contributions, such as those of Dr. Murray on the serum reactions of pregnancy, and Dr. Nicoll, the Ernest Hart Scholar of the British Medical Association, on fly-borne diseases. It would seem extraordinary that the country which had produced Harvey and Hunter and Jenner should at any time have to take a back rank in the matter of scientific investigation, and he was quite sure that what was needed was not fresh men, but opportunities for them to apply the abilities they had. This was a situation in which Croesus might very well come to their assistance and help them to establish and build that institution from which the results to the community, and to practical medicine in particular, would be of the greatest value. Many illustrations of the need of co-ordination might be brought from the therapeutic as well as the diagnostic side. He would give them a practical illustration from the practitioners' standpoint of the interest of the individual life to illustrate the advantage. It was only ten days ago since he had a case in which he as clinician was at a standstill. He called in a clinician of wider experience, but they were still at a stop. They consulted Dr. Milne, whose report put them in a position to relieve the patient. If this work was to be fully co-ordinated, they must have at their disposal much greater resources, and resources which could be applied to the work without any danger of being taken away from their medical charities. It was the necessity for avoiding competition between the research, and the purely therapeutic and charitable side of the institution, that he should like to emphasize, and he thought there was great public need for such development here and elsewhere.

Dr. MILNE said what Dr. Leitch had outlined in his remarks was an expression of the wish of every general practitioner, but the general practitioner was very suspicious of the scientist, and the reason for that was that the matter he read in the medical journals was far too technical for even scientists to understand, if they had not had the opportunity of doing the experiments for themselves. The experiment was easy; it was the explanation that was difficult. Dr. Leitch had outlined a scheme that was novel for this country. Perhaps the institute at Baltimore most nearly exemplified what Dr. Leitch meant. It was asked what good such an institution would do, but they might take the instance of the out-patient department of a hospital where there was a laboratory department. If there was a puzzling case there could be personal interviews between the surgeons or physicians and the pathologist or bacteriologist, and it would be much more valuable to the general practitioner that his patient could be sent to such an institution, and have the technical manipulations performed in such a way that the pathologist could have no doubt about the final diagnosis. He did not need to emphasize the importance of these methods of diagnosis; the pathologist was able to help the general practitioner in diagnosis in his own house. A general practitioner read in the medical journal that a certain method could be used in a case, but if he saw it employed he could use it in the future. He thought it would be a great benefit to the community that there should be a research man on the spot. If, say, an outbreak of typhoid occurred in Dundee, a research man might be put on to discover the causes that were local to Dundee. Then Dundee held a by no means creditable place in the lists of mortality, and there was much to be done in the matter.

Mr. DON said that at present a great deal of the material that passed through their hands was absolutely wasted, except as giving them a little more practical experience. The diseases were cured after certain rule-of-thumb methods, but the clinician was altogether dependent on himself, and it was evident that the great amount of work that was to be done could not be undertaken by one man or by half a dozen men. Their present pathological efforts were small as compared with the size of Dr. Leitch's scheme, and so long as they had only one or two or half a dozen pathologists to undertake the work there would likely be a great part of it left untouched. Time was given to what they might call the more interesting matter, and the common diseases were left over. He thought it was staffing they required and not so much brains or enthusiasm; they would get that as well if they had the staff.

Dr. FOGGIE said that the pathologist and clinician were both working on the same level, and the sooner that was definitely recognized the better. The attitude of the pathologist towards the physician wanted correction, and the attitude of the clinician towards the pathologist might require some little change. The great difficulty at the present day, when physicians and pathologists worked so closely together with regard to disease, was to get them to take a better view the one of the other. It was only by conjoint consultation and by active co-operation of the two workers that they could expect any progress. A great deal would depend on the *personnel* in Dr. Leitch's scheme; at present the *personnel* was excellent, but it was too limited. They could not expect one man to take up the whole subject, and no doubt they wanted in Dundee some one who could lecture on pathological chemistry. It was a distinct want, and they would require a man to devote his whole time to the matter. Another department that would be necessary would be a vaccine department such as they had in St. Mary's and Guy's in London, and he pointed out that much of the work that was being done in such places was influencing very largely the work done in Germany. With regard to tuberculosis, the difficulty was to know how much vaccine one should give to a patient, and unless they had some one to guide and control them they found clinical resources at an end, and the chances were that they might be doing more harm than good. In any future work they must look to more active co-operation between the clinician and the pathologist.

Dr. TULLOCH said the proposal to call in the laboratory man was all right; his remarks were addressed against the idea of the clinician becoming a laboratory experimenter. He agreed that the students should be brought in whenever possible.

Dr. PIRIE referred to the desirability of having an electrical department in Dr. Leitch's institution, and instanced a case where such methods had been of use to him. A lady had trouble with her wrist, whether due to a fracture or tuberculosis was uncertain, but examination in the laboratory at once made the fracture clear.

Dr. KERR asked if in the institution there would be diagnosis of diseases for poor patients who could not afford the cost of research.

Dr. LEITCH, in reply, said it seemed inevitable that laboratory methods of diagnosis must ultimately be provided for under the Insurance Act. As to whether the idea would be realized, that meeting was the first step in that direction. Their clinical material was being wasted because the clinician did not know what could be done with it and the pathologist did not know it was there. As to Germany's advance, he said it was due, not to the fact that the Germans were more scientific than they were, but because Germans had the opportunities and they had not.

BRITISH MEDICAL BENEVOLENT FUND.

AT the January meeting of the committee 14 cases were considered and grants amounting to £86 made to 11 of the applicants. Appended is an abstract of the cases assisted:

1. Daughter, aged 44, of late M.R.C.S. No income, and has been unable to earn a living for some years on account of increasing deafness. Finds she can hear with an instrument recommended by an aural surgeon, and asks for assistance to purchase it. Voted £5.
2. M.B., C.M.Edin., aged 57. Has a small practice in Hampshire, but finds great difficulty in obtaining his fees, and asks for a little help. Voted £5.
3. Widow, aged 41, of M.B., C.M.Edin. Quite unprovided for at husband's recent death after a long illness, and has four young children, the eldest only being 5 years old. Voted £10.
4. Daughter, aged 57, of late M.R.C.S. Is most willing and anxious to work, but has broken down in health and been obliged to give up a situation as companion. Relieved once, £12. Voted £12.
5. Daughter, aged 74, of late M.R.C.S. Supplements an income of a few shillings a week by needlework, but is unable to earn as much as formerly on account of rheumatism and failing eyesight. Relieved thirteen times, £125. Voted £12.
6. Daughter, aged 59, of late M.R.C.S. Has supported herself for more than thirty years as governess, school matron, etc., but is now unable to obtain a suitable post. Relieved five times, £60. Voted £12.
7. Widow, aged 56, of M.R.C.S. No income, no children, and unable to maintain herself on account of ill health. Relieved eight times, £80. Voted £2, and case to be reconsidered.
8. Widow, aged 60, of L.R.C.P., L.R.C.S.Irel. No income and is practically incapacitated by the loss of her right hand. Children unable to help. Relieved eight times, £68. Voted £12.
9. M.D.Aberd., aged 59. Used to have a fair practice in a Midland town, but has been incapacitated for several years by spastic paralysis, and is entirely dependent on pensions obtained from charitable societies. Three children, the eldest only 13 years old. Relieved three times, £33. Voted £5.
10. Widow, aged 66, of M.D.Edin. Supplements a small weekly allowance from relations by taking a boarder, and asks for a little help to meet unavoidable expenses. Relieved twice, £12. Voted £6.
11. Daughter, aged 50, of late F.R.C.S. Has supported herself as a companion, but at present has no post, and is not in very good health. Relieved six times, £35. Voted £5.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 15, Wimpole Street, W.

British Medical Benevolent Fund Guild.

On January 25th a drawing-room meeting of the British Medical Benevolent Fund Guild was held at 100, Harley Street, W., to meet the Lady Mayoress and to consider the extension of the Guild. Fifteen ladies have offered to work in making the charity better known, taking the metropolitan boroughs (with subdivisions) as the basis of the scheme. As a result of the meeting eleven boroughs will be systematically worked, and it is hoped that very shortly the whole twenty-nine will be visited. The ladies will work with Mrs. H. H. Clutton (3, Park Square, N.W.), who has consented to be chief secretary and organizer; and a date will be arranged when the workers and friends of the Guild will meet by invitation of the Lady Mayoress at the Mansion House.

SCIENCE NOTES.

Two other interesting cases of a parasite being itself afflicted by another parasite have been brought to light. It is well known that considerable destruction is wrought amongst olives by the olive fly, *Dacus oleae*. This beast, however, is one of the most unfortunate parasites, for it is infested not only by two different hymenopterous insects, but also by a third species, *Opius concolor*, which Marchal[1] has discovered in North Africa. Unlike the first two, the newcomer is a serious menace to the olive fly, pursuing it assiduously throughout its whole career. It passes its larval stage in the larva of the olive fly and passes into the pupal stage along with the latter. This inveterate foe is apparently not a European species, but, from economic considerations, Marchal recommends its importation. These importations, however, are not so generally successful as might be desirable. Of somewhat different character, though perhaps of more immediate interest, is the case reported by Fantham recently to the Royal Society. It concerns the common body louse, which is found to be the host of a species of flagellate protozoon—namely, *Herpetomonas pediculi*. Parasitic insects, such as fleas and lice, are, of course, well known as carriers of certain phases of the flagellate parasites of vertebrates, but the present case is in a different category, in that the *Herpetomonas* is confined to the louse, and is not a stage in the evolution of some vertebrate flagellate. The case is, indeed, analogous to the numerous instances of flagellate parasites inhabiting the alimentary canal of non-parasitic flies and other insects. These forms are usually non-pathogenic, and of little economic importance; but the present instance is of indirect importance from the fact that the body louse is suspected of transmitting *Leishmania infantum*. The knowledge that a flagellate parasite occurs naturally in the louse may prevent misinterpretations. It is of interest to add that the lice with which Dr. Fantham experimented were fed on his own body, and that at no time could flagellates be detected in his blood.

On reading an article by Gruvel[2] on the classification of lobsters we were somewhat struck by the straits in which systematists are sometimes placed in inventing names to designate genera and species. The enormous multiplicity of the latter has of late severely taxed the resources of the Latin and the Greek languages. It is a tacit understanding that the names should, if possible, bear some relation to the forms described, and fifty years ago that was not such a difficult matter. For specific names there were the old and well-established favourites, *magnus*, *parvus*, *crassus*, etc., while for generic names there was a variety of choice. In the course of time, however, the familiar classical roots were found inadequate to express the never-ending variety of permutations, and recourse was had to various subterfuges. Of these the most popular were place-names such as *tahitensis* and names of persons such as *Ludwigi*. Generic names, always the most difficult of invention, were also formed from persons' names, and in consequence we find almost every European name immortalized in terms such as *Mackenzia*, *Lankesterella*, *Dicksonia*, etc. These names obviously do not give any clue to the structural characteristics of the forms so designated, and for all practical purposes one might invent any agglomeration of letters with a suitable termination, such as *Gollywoggia*, and the unfortunate animal and plant would rejoice in the name for evermore, provided it escaped the meshes of the law of priority. A more skilful subterfuge, and one which has not been so universally adopted, is exemplified in the case of the rock lobsters. There is a well-known genus *Palinurus*, created by Fabricius in the latter half of the eighteenth century; the rock lobsters, in fact, are zoologically known as the *Palinuridae*, a name founded on this genus. It did not require much ingenuity to create a diminutive, namely, *Palinurellus*, but a more ingenious idea is evidenced in the metatheses—*Panulirus* White, and *Linuparus* Grey. This represents just about the limit of nomenclatural poverty, and is only surpassed by the case of the scientist, not altogether unknown to fame, who at the time of writing happened to be enamoured of the fair maiden *Carolina* by name. Such names as *Linocara*, *Rocalina*, and *Calonira* betray their origin only too well; at least, so the story goes.

A most remarkable instance of adaptation is described by Henueke[3] in the case of the fresh water tardigrade or water bear, *Macrobiotus macronyx*. On its first appendage the male bears peculiar hooks which are used in sexual union. The female about this time begins to moult, but the last skin does not actually fall off. It remains attached posteriorly as a sort of vesicular appendix. The males congregate around this, pierce it with their hooks, and discharge their sperms into it. The sperms are then left to find their own way into the cloaca of the female, and it is not surprising that all do not reach it. The female then proceeds to lay eggs, and here again the old skin is made to serve another useful purpose as a brood pouch, in which the eggs accumulate. They are carried about in this way until the young hatch out, when the skin finally drops off, although it may do so somewhat earlier.

[1] *Comptes rendus*, 1911, p. 215.

[2] *Comptes rendus*, 1911, p. 1350.

[3] *Zeitsch. f. wiss. Zool.*, 1911, p. 721.

LITERARY NOTES.

DR. GEORGE B. SHATTUCK has retired from active editorial management of the *Boston Medical and Surgical Journal*. Dr. Shattuck became editor of the *Journal* in 1881, and has therefore had an editorial experience of thirty-one years, a term exceeded in the United States only by Dr. I. Minis Hays of the *American Journal of the Medical Sciences* and Dr. George F. Shrady of the *Medical Record*, and equalled only by Dr. Frank P. Foster of the *New York Medical Journal*. The *New York Medical Journal*, in referring to Dr. Shattuck's retirement says, he "may well be satisfied with this long period of devotion to literary medicine, but his pride must be great as he reviews his work and sees how, under his management, the *Boston Medical and Surgical Journal* has not only maintained the high standards which have always characterized it, but has also steadily advanced in dignity and influence, holding its own with friendly rivals in the front rank of medical journals."

Allusion was made in the JOURNAL of January 27th to a man who described himself as the "Great Twalmley" on the strength of his being the inventor of a kind of box iron for smoothing linen. Boswell adds that the Bishop of Killaloe, on hearing the story, defended Twalmley's title to the epithet of "great," for Virgil, in the sixth book of the *Aeneid*, mentions among the group of worthies in the Elysian fields, "Inventas aut qui vitam excoluere per artes." While gladly admitting this claim, we do not think that a list of the world's greatest men should be all inventors of mechanical devices. A story used to be told of the late Mr. Labouchere that, on meeting Mr. Poole at Marienbad, the celebrated artist in masculine clothing complained to him of the mixed character of the visitors, to which "Labby" replied, "You would not have them all tailors, would you?" We need not point the moral of the "fable."

A correspondent writes:

Your remarks on the pronunciation of "enema" remind me of an incident years old. A certain surgeon who was noted for his quotations from Scripture on every occasion, possible and impossible, on going round his wards saw a patient with a high temperature. He gave directions to the nurse, and on the next day, on looking at the chart and seeing a marked fall in the temperature, he exclaimed with satisfaction:

Truly an enĕma hath done this.

Pronounced with a long "e" it would have had no point.

The *Aberdeen Daily Journal* of January 9th, in recording the death of George Florence, a farmer who recently died at Glenfoudland in his 91st year, gives some reminiscences of body-snatching. The deceased was a son of the late John Florence, for over half a century a grave-digger at Culsalmond, an occupation in which he was succeeded by another son. Florence was 11 years old when the resurrectionist rioting occurred in Aberdeen, and he had many recollections of the incidents associated with the suppression of the work of procuring bodies for dissection. In many churchyards in the north a place was set apart for the watchers—friends and relatives of the deceased persons who came to watch the place of interment for several nights after the burial. To the body-snatchers the churchyard of Culsalmond was something of a terror. It was practically unassailable. In a corner of the enclosure was erected a watch-house, where bodies were kept for weeks after death, until they were useless from the anatomist's point of view. The walls were of extraordinary thickness, the doors were of iron doubly fashioned, doubly locked, and the keys were placed in the custody of four key-keepers, elected periodically, and without whose personal attendance no one could enter. Among other gruesome stories which Florence had heard of in the north was that of an old man who had been in the habit of disinterring the recently buried, and selling them. He reinterred those for which he could find no purchasers in a piece of waste ground. He carried on this traffic for years, and after his death phantom forms and lights, it was said, were seen at the place where the unsold bodies were buried. In course of time, however, a church was built at that spot, and the ghosts never again appeared. Two farm servants one night had gone to visit their sweethearts, who were maidservants at the manse in an Aberdeenshire parish, and pending the arrival of the trysting hour they sought the shelter of a "lythe" corner of the graveyard. They had not been there long when two men arrived carrying pick, spades, and a small lantern. After scanning the ground for a moment with the aid of their lamp, they located the spot where they knew a grave had just been filled and a small white peg put at the top. Seizing hold of their implements in a businesslike way they set to work, and in less than half an hour they had the body exhumed and put into a bag. They placed the corpse under some shrubs while they went for a vehicle which had been left some little way off. While the body-snatchers were gone the ploughmen hid the body, and one of them volunteered to go into the bag and give the resurrectionists a fright when they returned. When the grave-robbers picked up the bag they noticed a movement within it, and heard a groan. For a moment they hesitated, then were about to shoulder their burden when another sepulchral groan from the bag, and a weird, unearthly yell from a corner of the graveyard made them drop the bag and fly in terror, leaving horse and trap behind them. The ploughmen were well rewarded for the part they had played, for the horse and trap were never claimed.

An eighteenth century doctor's bill which appeared in the January number of the *Old-Lore Miscellany of Orkney, Shetland, Caithness, and Sutherland*, Part I, vol. v, may be of interest to our readers as showing what may be taken as the average fees charged by the family doctor of that period. The original of this interesting document is in the possession of Mr. Horatius Bonar, W.S., of Edinburgh, and relates for the most part to the last illness of Mr. John Bonar, a minister of the Scottish Church, who died on April 22nd, 1752, and was attended on his death-bed by a certain John Gifford. The account, which is headed "Accompt Mr. John Bonar, minister, to Jno. Gifford, surgeon, 1752," runs as follows:

		Str. £	s.	d.
For antiscorbutic materialls to your daughter...		0	4	0
Febr. 17.	For a glass Wades balsam		4	1
March.	A blooding to yourself		1	0
Aprile.	For a purging potion		2	0
	For a box of alterative pills		4	8
	For a purging apozem		2	0
	The alterative pills renewed in larger quantity		6	1
	Fourteen doses Peruvian bark ...		6	1
	For three purging doses		4	6
	For liniments, tincture, &c., to your mouth		10	6
		2	4	11
	For travelling charges and attendance	2	10	0
		4	14	11
	Received in cash	1	0	0
		3	14	11

Towne, 2nd July, 1752, by the above acctt. theire is a ballance of three pound fourteen shills. and eleven pence str. due by Mr. John Bonar in favours of Jno. Gifford.

The above accompt payed to and discharged by

(Signed) JN.O. GIFFORD.

One wonders if "the above accompt" was considered excessive by the family of the deceased minister, and if "Jno. Gifford, surgeon," continued to attend them whenever they happened to require "a purging potion" or "a box of alterative pills." The January number of *Old-Lore Miscellany* contains several other items of interest besides this page from an old account book. A graphic description of "Some Old-time Shetlandic Wrecks" has been contributed by Mr. R. Stuart Bruce; whilst Mr. J. Storer Clouston writes very entertainingly on the origin of "Orkney Surnames," and Mr. Gilbert Goudie gives some interesting examples of the ancient folk-lore of the Shetland Islands. A curious piece of literary history, moreover, is to be found in an article on the new Gaelic dictionary, from which we learn that the compiler, Mr. Ewan MacDonald, far from being a Highlander, hails from the West of England; and, with a disinterestedness rare enough in these days, gave up nine years of his life to the stupendous task of writing and printing with his own hands a book which in future should be "indispensable alike to Celt and Viking."